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Department of Forensic Science Digital Evidence Procedures Manual	Amendment Designator:
	Effective Date: 22-January-2008
<div data-bbox="483 291 1211 323" data-label="Section-Header"> <h2>12 AUDIO / VIDEO MAGNETIC TAPE RECONSTRUCTION</h2> </div> <div data-bbox="151 354 342 386" data-label="Section-Header"> <h3>12.1 Purpose</h3> </div> <div data-bbox="245 417 1516 506" data-label="Text"> <p>Damaged magnetic media can usually be repaired in order to restore evidentiary audio or video information that would otherwise be lost. This media can be repaired by a variety of techniques in an effort to recover damaged evidence from breakage, stretched, crinkled, worn, twisted or exposure to environmental elements.</p> </div> <div data-bbox="151 537 315 569" data-label="Section-Header"> <h3>12.2 Scope</h3> </div> <div data-bbox="245 600 1539 657" data-label="Text"> <p>This procedure applies to damaged magnetic audio and video media, as determined through a preliminary examination of multimedia.</p> </div> <div data-bbox="151 688 881 720" data-label="Section-Header"> <h3>12.3 Materials - Equipment (Hardware/Software) - Reagents</h3> </div> <div data-bbox="245 751 1432 810" data-label="Text"> <p>The following is determined by the type and extent of damage to the media and may include, but not limited to, the following items:</p> </div> <div data-bbox="245 842 925 1392" data-label="List-Group"> <ul style="list-style-type: none"> • Replacement cassette and/or new parts • Splicing tabs/tape • Splicing leader • Splicing blocks • Screw drivers • Razor blades • Scissors • Iron • Cleaning solvents (e.g. isopropyl alcohol, mild liquid soap) • Distilled water • Non-magnetic instruments (e.g. tweezers, cleaning swabs) • Camera (e.g. film, digital/still, video) • Flashlight/light source • Magnifier • Protective gloves/safety glasses • Ferro Fluid • Development control tape </div> <div data-bbox="151 1423 380 1453" data-label="Section-Header"> <h3>12.4 Limitations</h3> </div> <div data-bbox="245 1484 1542 1575" data-label="Text"> <p>Not all damaged magnetic media can be repaired or cleaned to where the signals can be recovered. Depending on the type and extent of the reconstruction, measurements may be made as to the length of the repaired or irreparable segments. If measurements are taken, they will be maintained with the examiner's case notes.</p> </div> <div data-bbox="151 1606 319 1635" data-label="Section-Header"> <h3>12.5 Safety</h3> </div> <div data-bbox="245 1667 1547 1879" data-label="List-Group"> <div data-bbox="245 1667 1547 1728"> <p>12.5.1 Gloves, safety glasses and a lab coat should be worn to handle any potentially bio-hazardous evidence, as well as when utilizing chemicals.</p> </div> <div data-bbox="245 1759 1446 1789"> <p>12.5.2 The location of MSDS for chemicals used in the reconstruction process will be known by all examiners.</p> </div> <div data-bbox="245 1820 1547 1879"> <p>12.5.3 Reconstruction often requires the use of extremely sharp cutting instruments. The proper and careful use of these instruments during the repair process is required.</p> </div> </div>	

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<p>12.6 Procedures</p> <p>Precautions must be considered when handling magnetic media to protect evidence from loss, cross-contamination, and/or deleterious change as a result of magnetic fields. The appropriate order to be applied is to be determined by the examiner.</p> <p>12.6.1 A visual examination is to be performed to ascertain if there is any damage to the media or cassette and the extent of the damage. If damage is located, it will be documented by photograph, copy or diagram and retained in the case file notes.</p> <p>12.6.2 A visual examination of the magnetic media will be performed to ascertain if there is damage, the location of the damage, and the extent of the damage. If damage is located it will be documented by photograph, copy or diagram and retained in the case file notes.</p> <p>12.6.3 If the media is damaged in a location that requires removal of the original cassette, it should be repaired and placed into a new cassette and properly marked with the FS lab number, item number and examiner's initials.</p> <p>12.6.4 If the result of the physical examination reveals foreign substance(s) on the media itself, the following will apply.</p> <p>12.6.5 Clean the media.</p> <p>12.6.6 The cleaning materials may include distilled water, isopropyl alcohol, liquid soap and other solvents. If other solvents are utilized, procedures should be utilized on non-evidentiary control media prior to use on the actual evidence to ensure the solvent will not damage the original media.</p> <p>12.6.7 Depending on the nature of the foreign substance on the media, the cleaning methods used may include, but are not limited to, dipping, soaking and/or wiping.</p> <p>12.6.8 The media should be allowed to air dry.</p> <p>12.6.9 The media should be straightened and twists removed. In extreme cases, it may be necessary to use a low temperature iron to flatten out the media. An inert material must be utilized as an insulating buffer between the iron and the media. This procedure should be tested on non-evidentiary control media prior to its use on actual evidence to insure no damage occurs to the original evidence.</p> <p>12.6.10 Prior to splicing of the media, identify the magnetic and non-magnetic side of the media by using ferro fluid, microscope or other means. Not all steps are applicable to or necessary for all types of recordings. The examiner may select the appropriate steps based on the actual evidence and its condition.</p> <p>12.6.11 Magnetic development should not be utilized on digital media.</p> <p>12.6.12 If ferro fluid is being used, place several drops on the media and wait for the solvent to evaporate.</p> <p>12.6.13 Visually examine the media (magnification may be necessary) to determine the record track position and configuration by observing the magnetic pattern. If track configuration is not visible, repeat steps 12.6.10 and 12.6.12 with the control media. As is the likelihood, several segments of the media will be blank. The running of the control is only necessary once per development session.</p> <p>12.6.14 If ferro fluid is utilized, clean the residue from the media using a wet and/or dry wipe and allow the media to air dry. Special care must be taken to ensure the media is not damaged.</p> <p>12.6.15 Document magnetic development conducted on the media including the control tests when conducted, and results in the case file notes.</p>	

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<p>12.6.16 Add splicing tapes/tabs and/or leader to the non-magnetic side of the media to repair and reinforce the damaged area. It is possible that the physical ends of the broken media will provide information to assist the examiner in aligning the media splices correctly.</p> <p>12.6.17 If sections of the media cannot be sufficiently repaired, trim and/or remove this damaged media to allow playback of the remaining media.</p> <p>12.6.18 The splicing tabs must be initialed by the examiner.</p> <p>12.6.19 The repair of the original cassette can be performed with replacement parts as needed. If the original cassette is contaminated or damaged beyond repair, it should be replaced with a new one. The replacement cassette will be properly marked as described by the Quality Manual and the appropriate write block protection applied.</p> <p>12.6.20 All items remaining from this process will be returned with the original submitted evidence.</p> <p>12.6.21 The repaired/reconstructed media will be placed into a playback device for examination. It is recommended that a copy of the repaired recording be produced due to the limitations of the repaired/reconstructed evidence.</p> <p>12.6.22 If further analysis is required, refer to the applicable procedure.</p> <p>12.6.23 Upon completion of the analysis, it will be necessary to clean the equipment.</p> <p style="text-align: right;">◆ End</p>	